LISTING OF CLAIMS

This listing of claims will replace all previous versions or listings of the claims.

CLAIMS

1. (Currently amended) In a wireless communications device, a method for field diagnosing system software, the method comprising:

executing the system software, the system software being formed into symbol libraries, each symbol library comprising symbols having related functionality and the symbol libraries being arranged into code sections in a code storage section of a nonvolatile memory;

receiving patch manager run time instructions (PMRTI), including a dynamic instruction set and a new code section, in a file system section of the nonvolatile memory;

launching a run-time engine; ~~and,~~

processing the dynamic instruction sets to field diagnose the system software;

in response to field diagnosing the system software, operating on system data and the system software; and,

following the operating on the system data and the system software, repeating the executing the system software.

2. (Cancelled).

3. (Cancelled).

4. (Currently amended) The method of claim 1 ~~3~~ wherein receiving a dynamic instruction sets includes receiving a diagnosis instruction sets, and wherein receiving a new code section includes receiving a diagnosis code section;

the method further comprising:

storing the diagnosis code sections in nonvolatile memory permanent storage; and,

wherein processing the dynamic instruction sets includes processing the diagnosis instruction set to execute the diagnosis code section with the system software.

5. (Currently amended) The method of claim 4 wherein processing the diagnosis instruction sets includes collecting system data.

6. (Currently amended) The method of claim 5 wherein processing the diagnosis instruction sets includes, in response to executing the diagnosis code section with the system software, collecting system data.

7. (Currently amended) The method of claim 5 wherein collecting system data includes collecting the addresses and values of symbols in a read-write volatile memory.

8. (Currently amended) The method of claim 5 wherein processing the diagnosis instruction sets includes storing the collected system data in a first code section in the file system section.

9. (Currently amended) The method of claim 5 wherein processing the diagnosis instruction sets includes using conditional operation code to analyze the collected data.

10. (Currently amended) The method of claim 9 wherein operating on the system data and the system software includes updating the system data in response to analyzing the collected data; and,

wherein executing the system software includes using the updated system data.

11. (Currently amended) The method of claim 6 wherein receiving a diagnosis code section includes receiving a predetermined sets of updated system data;

wherein processing the diagnosis instruction sets includes selecting an updated system data set; and,

wherein operating on the system data and the system software includes using the selected updated system data set to execute the system software.

12. (Currently amended) The method of claim 11 wherein receiving a diagnosis code section includes receiving a test code section having a plurality of temporary code symbol libraries and corresponding constraints;

wherein processing the diagnosis instruction sets includes executing a first temporary code;

wherein analyzing the collected data includes comparing system data, collected in response to executing the first temporary code, to the corresponding constraints;

wherein operating on the system data and the system software includes:

temporarily updating the software data per the first temporary code constraints if the collected system data passes analysis; and,

temporarily redirecting selected system software symbols to counterpart symbols in the first temporary code symbol library of the diagnosis code section; and,

wherein processing diagnosis instruction sets includes executing alternate temporary code symbol libraries if the collected system data does not pass analysis.

13. (Original) The method of claim 12 wherein arranging the symbol libraries into code sections includes starting symbol libraries at the start of code sections and arranging symbols to be offset from their respective code section start addresses;

the method further comprising:

storing the start of code sections at corresponding start addresses;

maintaining a code section address table cross-referencing code section identifiers with corresponding start addresses;

maintaining a symbol offset address table cross-referencing symbol identifiers with corresponding offset addresses and corresponding code section identifiers; and,

wherein executing temporary code symbol libraries from the test code sections includes updating the symbol offset address table and code section address table with addresses in the diagnosis code section.

14. (Original) The method of claim 13 wherein receiving a diagnosis code section includes receiving a test code section with temporary code symbol library and constraints organized as system data trigger values; and,

wherein analyzing the collected data includes comparing system data, collected in response to executing the first temporary code, to the sets of system data trigger values.

15. (Original) The method of claim 13 further comprising:

transmitting the collection of temporary software data updates and temporarily redirected system software symbols via an airlink interface;

receiving an updated code section with an updated code section address table and updated symbol offset address table in the file system section; and,

wherein processing diagnosis instruction sets includes storing the updated code section with updated code section address table and symbol offset address table in permanent storage.

16. (Currently amended) The method of claim 8 wherein processing the diagnosis instruction sets includes transmitting the collected system data via an airlink interface;

the method further comprising:

receiving a new patch manager run time instruction with a new code section including updated data;

replacinged a first code section in permanent storage with the new code section; and,

executing the system software using the new code section.

17. (Currently amended) The method of claim 1 ~~3~~ further comprising:

following the field diagnosis of the system software, removing the dynamic instructions sets from the file system section.

18. (Cancelled).

19. (Currently amended) In a wireless communications device, a system for field diagnosing system software, the system comprising:

a nonvolatile memory comprising a file system section and a code storage section, the code storage section comprising code sections, the code sections storing system data and the system software, the system software being formed into symbol libraries, each symbol library comprising symbols having related functionality arranged into the code sections in the code storage section;

a processor connected to the nonvolatile memory;

~~executable system software and system data differentiated into code sections stored in nonvolatile memory permanent storage;~~

a field diagnosis dynamic instruction set~~s~~ stored in the nonvolatile memory for diagnosing the system software in the field; and,

a run-time engine stored in the nonvolatile memory and configured:

to be run by the processor;

to receive patch manager run time instructions (PMRTI) including the field diagnosis dynamic instruction set and new code sections;

to ~~for~~ processi~~ng~~ the field diagnosis dynamic instruction set~~s~~;

to operate on system data and the system software; and,

to execute the system software following the operation on the system software and the system data.

20. (Cancelled).

21. (Cancelled).

22. (Currently amended) The system of claim 19 ~~21~~ wherein the file system section receives ~~a~~ the field diagnosis dynamic instruction set and a diagnosis code section;

wherein the diagnosis code section is stored in the nonvolatile memory; and,

wherein the field diagnosis dynamic instruction set executes the diagnosis code section with the system software.

23. (Currently amended) The system of claim 22 wherein the field diagnosis dynamic instruction sets collects system data.

24. (Currently amended) The system of claim 23 wherein the field diagnosis dynamic instruction sets collects system data in response to executing the diagnosis code section with the system software.

25. (Currently amended) The system of claim 23 further comprising:

read-write volatile memory; and,

wherein the field diagnosis dynamic instruction sets collects the addresses and values of symbols stored in read-write volatile memory.

26. (Currently amended) The system of claim 23 wherein the field diagnosis dynamic instruction sets stores the collected system data in a first code section in the file system section.

27. (Currently amended) The system of claim 23 wherein the field diagnosis dynamic instruction sets uses a conditional diagnosis instruction sets to analyze the collected data.

28. (Original) The system of claim 27 wherein the system data is updated in response to analyzing the collected data, and the system software is executed using the updated system data.

29. (Currently amended) The system of claim 24 wherein the diagnosis code section includes predetermined sets of updated system data;

wherein the field diagnosis dynamic instruction sets selects an updated system data set; and,

wherein the system software executes using the selected updated system data set.

30. (Currently amended) The system of claim 29 wherein the diagnosis code section includes a plurality of temporary code symbol libraries and corresponding constraints;

wherein the field diagnosis dynamic instruction sets executes a first temporary code and compares system data, collected in response to executing the first temporary code, to the corresponding constraints;

wherein the system data is temporarily updated per the first temporary code constraints if the collected system data passes analysis, and wherein the system software temporarily redirects selected system software symbols to counterpart symbols in the first temporary code symbol library of the diagnosis code section; and,

wherein the diagnosis instruction sets execute alternate temporary code symbol libraries if the collected system data does not pass analysis.

31. (Original) The system of claim 30 wherein the system software includes symbol libraries starting at the start of code sections, symbols arranged to be offset from their respective code section start addresses, and the start of code sections being stored at corresponding start addresses;

the system further comprising:

a code section address table cross-referencing code section identifiers with corresponding start addresses;

a symbol offset address table cross-referencing code section identifiers with corresponding offset addresses and offset addresses and corresponding code section identifiers; and,

wherein the diagnosis instruction sets update the symbol offset address table and code section address table with addresses in the diagnosis code section.

32. (Original) The system of claim 31 wherein the diagnosis code section includes constraints organized as system data trigger values;

wherein the diagnosis instruction sets analyze the collected data by comparing system data, collected in response to executing the first temporary code, to the sets of system data trigger values.

33. (Original) The system of claim 31 further comprising:

an airlink interface;

wherein the diagnosis instruction sets transmit the collection of temporary software data updates and temporarily redirected system software symbols, via the airlink interface, and receive an updated code section with an updated code section address table and updated symbol offset address table in the file system section via the airlink interface; and,

wherein the diagnosis instruction sets store the updated code section with updated code section address table and symbol offset table in permanent storage.

34. (Currently amended) The system of claim 26 further comprising:

an airlink interface to transmit the system data collected by the field diagnosis dynamic instruction sets; and,

a new patch manager run time instruction with a new code section including updated data received via the airlink interface;

wherein the field diagnosis dynamic instruction sets replace a first code section in ~~permanent storage~~ the nonvolatile memory with the new code section; and,

wherein the system software is executed using the new code section.

35. (Cancelled).